

Substituting Waste Gypsum Wallboard for Agricultural Gypsum

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Best Management Practices for Processing and Applying Waste Wallboard as an Agricultural Gypsum Substitute

Construction and Demolition (C&D) Debris is a widely underutilized resource that represents nearly 30% of the non-municipal waste stream entering Wisconsin landfills.

Large quantities of relatively clean high-value materials are disposed of in landfills, resulting in higher C&D costs and wasted resources for the industry. Gypsum wallboard represents 20% of the waste stream from new commercial and residential construction.

Waste gypsum wallboard (“drywall”) from new residential and commercial construction may be exempted from solid waste regulations to encourage recycling.

Gypsum wallboard is used to cover interior walls of homes, offices and other structures. It is composed of gypsum (calcium sulfate dihydrate) and a paper backing.

Land application of crushed and sieved wallboard scrap is a value-added means of responsibly managing this construction debris. Users of ground wallboard for crop production reduce disposal costs and reap the agronomic benefit of the material. Gypsum is used in agriculture as a fertilizer and as a soil amendment. Both calcium and sulfur are essential plant nutrients. Gypsum is *not* a liming material and will not increase soil pH.

This factsheet provides instruction on how to properly manage scrap gypsum wallboard intended for use as a substitute for agricultural gypsum.

What do I need to do to process wallboard as a gypsum substitute?

Before undertaking any wallboard processing operation you must obtain an exemption from the DNR before you begin operation. Instructions for obtaining this exemption are found on page 2 of this fact sheet.

Listed below are some requirements and suggestions that are important to obtaining an exemption to process wallboard.

1. Segregate scrap wallboard

Select only new scrap wallboard that has not been treated with surface chemicals (e.g. fire retardant, water-resistant) and is substantially free of tape, joint compounds, paint, nails, screws or other contaminants. Wallboard from demolition projects is generally unacceptable due to the high potential of the material being contaminated during its use.

Note: Specialty wallboard such as “blue board” and “green board” contain fire retardant, vinyl, paraffin, aluminum foil and high levels of fiberglass and are not acceptable. Residential and commercial wallboard containing less than 1% fiberglass (commonly known as Type X wallboard) is acceptable.

2. Grind the wallboard scraps

Wallboard waiting to be ground needs to be stored in a manner which will minimize rainwater runoff from escaping the storage area. This can be accomplished by storing the material in a closed building; using a 3 sided bunker with a waterproof cover; or surrounding the storage pile with an erosion fence, silt sock, or other appropriate method of control which prevents gypsum from washing off the storage area. The wallboard should not be stored in a manner that allows the wallboard from become excessively wetted so that grinding is impaired or causes nuisance conditions.

Wallboard that has been ground needs to be stored in a manner that minimizes exposure to wind and water. This can be accomplished by storing the material inside a building or closed container. Three sided bunkers with a

waterproof cover across the top may be acceptable for larger quantities of material.

Volumes of wallboard should not be accumulated beyond the amounts necessary to run an efficient grinding operation and provide for efficient shipping practices. It is advisable to store no more than 1,000 dry tons total of ground wallboard and material waiting to be ground.

Grind the wallboard in a manner that controls dust from the grinder. Grinders outfitted with dust shields and/or water sprays can accomplish this.

The wallboard should be ground to a size that allows for even distribution in the farm field. A particle size no larger than ½ inch with the bulk of the product passing through a 100-mesh sieve is desirable.

Maintain records of the total amount of wallboard processed.

Note: Ground wallboard may be added to fertilizer and soil conditioner formulations as a substitute for agricultural gypsum.

What do I need to do before I can use wallboard as a gypsum substitute on my farm?

If you are going to process the wallboard yourself, you will need to follow the instructions on page 1 of this fact sheet and obtain an approval by the DNR to process the wallboard as the first step. If you are going to purchase or otherwise acquire the material from a wallboard processor, then you only need to follow the steps below.

1. Determine the application rate

Test the field that will receive the ground wallboard for sulfur content. The application rate for the ground wallboard will be based on the current sulfate content of the field and the sulfur needs of the crop to be planted.

Note: [Soil Test Recommendations for Field, Vegetable, and Fruit Crops](#), Publication A 2809, University of Wisconsin Extension, K.A. Kelling, L.G. Bundy, S.M. Combs, and J.B. Peters, is an appropriate method to determine application rates.

2. Apply the ground wallboard

Apply the ground wallboard in accordance with soil and agronomic nutrient requirements as determined through actual soil tests. Choose days when the wind will not cause excessive blowing of the material to adjacent properties.

Keep records of the amount and location of the wallboard applied.

The Department of Natural Resources does not specifically endorse or recommend recycling facilities. Therefore, make sure your chosen recycler meets all local, state and federal regulatory requirements.

How to Obtain an Exemption from the DNR

An exemption can be obtained from your local DNR office by submitting a letter requesting a low hazard exemption for using ground wallboard as an agricultural gypsum substitute. The letter must contain your company's name, address, a contact person, phone number and an estimate of the amount of wallboard that you expect to use annually. An example letter developed by WasteCap Wisconsin is attached at the end of the fact sheet, along with addresses of the local DNR offices. The DNR may specify requirements in addition to the best management practices described in this fact sheet if they are appropriate to prevent potential hazards to public health and the environment.

For More Information

For more information on similar subjects visit the DNR Waste Program website:

<http://dnr.wi.gov/org/aw/wm/condemo/index.htm>

or the DNR Cooperative Environmental Assistance website:

- <http://dnr.wi.gov/org/caer/cea/assistance/construction/index.htm>

To read about all state administrative codes pertaining to solid waste see:

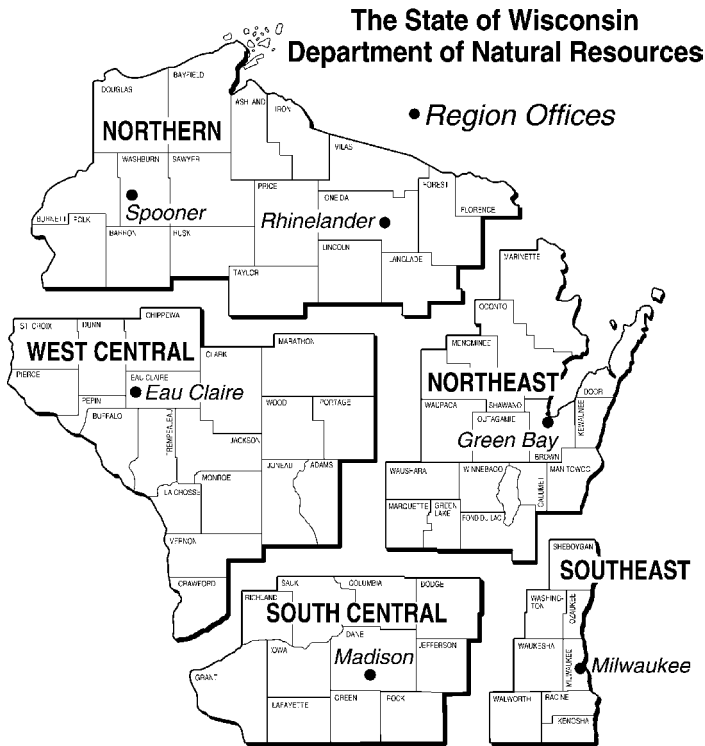
- <http://www.dnr.state.wi.us/org/aw/wm/information/wiacssh.htm>

To access Wisconsin's solid waste rules (Chs NR 500, NR 502, and NR 518, Wis. Adm. Code), see:

- <http://www.legis.state.wi.us/rsb/code/nr/nr500.pdf>
- <http://www.legis.state.wi.us/rsb/code/nr/nr502.pdf>
- <http://www.legis.state.wi.us/rsb/code/nr/nr518.pdf>

How to Reach Us

For additional information on waste management requirements and recycling options, contact the waste management staff at these DNR regional offices:



- Northeast Region
1298 Lombardi Ave.
Green Bay WI 54304
920/492-5870 – Waste Program Manager
- Northern Region
107 Sutliff Ave.
Rhinelander, WI 54501
715/365-8946 – Waste Program Manager
- South Central Region
3911 Fish Hatchery Road
Fitchburg, WI 53711
608/275-3466 - Waste Program Manager
- Southeast Region
2300 N. Martin Luther King Jr. Drive
Milwaukee, WI 53212
414/263-8694 - Waste Program Manager
- West Central Region
1300 W. Clairemont Ave.
Eau Claire, WI 54702
715/839-3708 – Waste Program Manager

This document is intended solely as guidance and does not include any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any manner addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

This publication is available in alternative format upon request. Please call (608) 266-2111 for more information.

The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services and functions under an Affirmative Action Plan. If you have any questions, please write to Equal Opportunity Office, Department of Interior, Washington, D.C. 20240.

This factsheet was published by the DNR's Bureau of Waste Management in cooperation with the Bureau of Cooperative Environmental Assistance, Construction and Demolition Industry Sector Specialist.

Request for Low Hazard Exemption for Wallboard Processors and Agricultural Users

Put letter on company letterhead. Make sure the letterhead has all pertinent contact information, including: company name, street address, phone number, fax number and email address. If the letterhead does not contain all this information, or you don't have a letterhead, include it in the letter.

Insert date. Address letter to (see list of regional DNR contacts):

Example for South Central Region:

Waste Program Manager
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, Wisconsin 53711-5397

Dear DNR:

On behalf of (company or farm name) I herewith request a Low Hazard Grant of Exemption from regulation for the storage, processing and/or use of ground new construction wallboard for the purpose of landspreading it as a substitute for agricultural gypsum on agricultural fields.

Normally discarded material, such as scrap wallboard left over from construction projects, is a solid waste as defined in s. 289.01(33), Wis. Stats., and exemptions to allow for the recycling of low hazard wastes are allowable under s. 289.43 (8), Wis. Stats., and NR 500.08(5), Wis. Adm. Code.

I understand that the scrap wallboard used to make the agricultural gypsum substitute must not include specialty wallboard that contains vinyl, aluminum foil, high levels of fiberglass or glass mat water resistant wall board, nor can it be painted or finished with other surface coatings.

I further understand that any use of the wallboard material should adhere to the best management practice guidelines "Substituting Waste Gypsum Wallboard for Agricultural Gypsum" published by the DNR.

By receiving this exemption, I estimate that our company expects to divert approximately _____ tons* of wallboard waste from state landfills in the next year.

I have enclosed a check in the amount of \$550**, payable to the Wisconsin Department of Natural Resources, for the permit fee. I understand that this is a one-time fee.

I look forward to your response.

Sincerely,

(sign name)

typed name, title

company name

Enclosure (check)

*Residential construction yields approximately 1.0 pounds of wallboard waste per square foot constructed in homes. Estimate the square footage you anticipate building in the next year, convert to wallboard waste pounds, calculate tons and enter total.

****For farmers that are processing and utilizing the wallboard on their own agricultural fields, the fee is waived.**

Draft exemption letter created by WasteCap Wisconsin, Inc. in cooperation with the WI DNR. No guarantee is given or implied that use of this sample will result in a successful exemption by the WI DNR. WasteCap Wisconsin has additional information available to help recycle construction and demolition debris.

414-961-1100, wastecap@wastecapwi.org. www.wastecapwi.org